REMARKS

Claims 1-34 are pending. Of these, claims 1, 18, 22, 31 and 32 are independent.

Specification Objection

On page 2 of the Office Action, the Examiner has objected to terminology in claims 14, 22 and 31 as lacking antecedent basis. Applicants appreciate the Examiner's close review of the claim language and have made clarifying changes to claims 14, 22 and 31.

In claim 14, the phrase "stored information" refers to the "stored monitoring information" of claim 2 from which claim 14 depends. Accordingly, claim 14 has been changed as follows to establish better antecedent basis: stored <u>monitoring</u> information. Similarly, the phrase "a storage unit pair" has been changed as follows: <u>the at least one</u> [a] storage unit pair.

In claims 22 and 31, Applicants intended to employ the phrase "at least one storage unit pair" uniformly. Unfortunately, each of claims 22 and 31 has an instance of the two phrases "the storage unit pair" and "the pair of storage units." Accordingly, to improve uniformity of phrasing, claims 22 and 31 have been clarified as follows: <u>at least one</u> ~~the~~ storage unit pair; and <u>at least one</u> ~~pair of~~ storage ~~units~~ unit pair.

In view of the foregoing discussion, withdrawal of this objection is requested.

It is submitted that these claim changes do <u>not</u> represent narrowing amendments.

Rejection Under 35 U.S.C. §102

On page 3 of the Office Action, claims 1-6, 11, 14-15, 18-20, 22-26 an 28-34 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,260,124 (the '124 patent) to Crockett et al. Applicants traverse.

The '124 patent is directed to a backup storage system in which a secondary storage 106 (see Fig. 1) is used to shadow data on a primary storage 104. The '124 patent solves the problem of how to handle the situation in which a data update is forwarded from primary storage 104 to secondary storage 106 while secondary storage is undergoing a static resynchronization (hereafter, resync) relative to primary storage 104. The need for a static resynchronization arises when, as stated in lines 20-25 of column 2,

> error conditions arise preventing proper mirroring of data from the primary site to the backup storage. These conditions include failure of the backup storage, communications failure between the data mover and backup storage, etc.

Additional error conditions are identified, as well as a resync being an appropriate response thereto, in lines 39-47 of column 1:

> Shadowing may stop for various reasons, such as interruption of primary/secondary communications, errors occurring at the secondary site, etc. After the problem is corrected, shadowing resumes under a "restart" procedure. At this point, primary data that was changed ("updated") during the shadowing interruption must be copied from the primary site to the secondary site, thereby bring the secondary site up to date. This process is called "resynchronization."

The problem that the '124 patent solves more particularly concerns the possibility that normal data updates (dynamic resync) to secondary storage 106 might target the same track/record that the static resync targets. As the dynamic resync reflects a more recent change than what is reflected in the static resync, the static resync to a track/record must precede the dynamic resync. As noted in lines 58-67 of column 2:

> [C]are is needed to ensure that the dynamic and static resynchronization process occur in the proper relative order, to avoid writing older data over newer data. Accordingly, a determination is first made whether (1) the update corresponds to any of the tracks present in the progress queue [which identifies the tracks to which data is currently being written]. If not, there is a danger that the static and dynamic resynchronization process might apply their data in the wrong order. In this event,

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dynamic resynchronization waits until the data record is shown in the progress queue.

The '124 patent is focused on what occurs <u>after</u> an error condition is resolved <u>and after</u> primary storage 104 and secondary storage 106 are readied to resume mirroring of primary storage 104 on secondary storage 106, e.g., resynchronization, normal updates, etc. There is <u>almost no mention</u> in the '124 patent <u>of recognizing</u> the <u>existence of such error conditions</u>. Lines 9-20, which contain <u>the only discussion</u> of recognizing error conditions, state (<u>underlined</u> emphasis added):

> In the static resynchronization process 406, <u>the data mover 114 detects an "error condition" (step 416).</u> An error condition is a state of the system 100 preventing mirroring of data from primary to backup storage. For example, the error condition may involve failure or other unavailability of the backup storage 106 or controller 110, or failure occurring in the communications chain between the backup storage 106, data mover 114, and primary controller 108. If an error condition exists, steps are taken to resolve the error (step 418). This may involve a system administrator reconfiguring one or more components of the system 100, a technician repairing or replacing a failed component, or self-repair of the affected component. When the error has been resolved, re-enabling mirroring to the backup storage 106, the data mover 114 performs static resynchronization (step 420).

Amazingly, in a passage of 138 words (really, in the entire '124 patent), only 10 are directed to recognizing error conditions.

The '124 patent barely mentions recognizing error conditions because that this tangential, at best, to the invention described in the '124 patent. There is no thought given in the '124 patent as to <u>how</u> the error conditions are recognized. It is no coincidence that every one of the six independent claims in the '124 patent include the phrase "after termination of an error condition" as the first words following the transition word "comprising" separating the preamble from the claim-body. The <u>'124 patent assumes that, somehow, the recognition could be made</u> by a data mover 114 (which is responsible for carrying out the resysncs and normal updates).

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To obtain information for automatically determining the status of a mirroring process, e.g., suspended, independent claim 1 recites "requesting mirroring software to obtain status information relating to the at least one of a pair of storage units." In view of the discussion above, it should be clear that this aspect (at the least) of claim 1 is not literally disclosed by the '124 patent. Applicants infer that the Examiner considers this to be inherently disclosed by the '124 patent. It is not.

Under U.S. patent law, an aspect not literally disclosed by a reference is considered to be inherently present if the difference between what is literally disclosed and what is claimed necessarily follows from the literal disclosure. Here, it is unreasonable to assert that the claimed "requesting mirroring software to obtain status information relating to the at least one of a pair of storage units" necessarily follows from the following literal statement (in lines 9-20 of column 7) of the '124 patent:

> In the static resynchronization process 406, the data mover 114 detects an "error condition" (step 416).

To that extent that the Examiner disagrees, Applicants challenge the Examiner to present reasoning explaining how the claimed aspect necessarily follows from what is literally disclosed by the '124 patent. In the alternative, to the extent that the '124 patent somehow suggests this claimed aspect, Applicants submit that the '124 patent is non-enabling of this claimed aspect.

Thus, a distinction of claim 1 over the '124 patent is "requesting mirroring software to obtain status information relating to the at least one of a pair of storage units." Again, the '124 patent neither literally nor inherently discloses at least this aspect of claim 1. Claims 2-6, 11 and 14-15 depend at least indirectly from claim 1, respectively, and similarly distinguish over the '124 patent by dependency.

Independent claims 18, 22, 31 and 32 recites a similar feature to that of claim 1 discussed above, and hence each similarly distinguishes over the '124

patent. Claims 19-20, 23-26, 28-30 and 33-34 depend at least indirectly from claims 18, 22 and 32, respectively, and similarly distinguish over the '124 patent by dependency.

In view of the foregoing discussion, Applicants request withdrawal of the §102 rejection over the '124 patent.

Allowable Subject Matter

Applicants acknowledge with appreciation that claims 7-10, 12-13, 16-17, 21, 27 are indicated (on page 5 of the Office Action) as defining allowable subject matter (but for their respective dependence a rejected base claim).

CONCLUSION

The issues in the case are considered to be resolved. Accordingly, Applicants again request a Notice of Allowability.
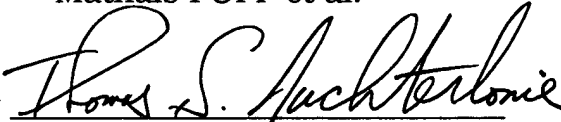
Person to Contact

In the event that any matters remain at issue in the application, the Examiner is invited to contact the undersigned at (703) 668-8000 in the Northern Virginia area, for the purpose of a telephonic interview.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-2025 for any additional fees under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

Mathais POPP et al.

By _____

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